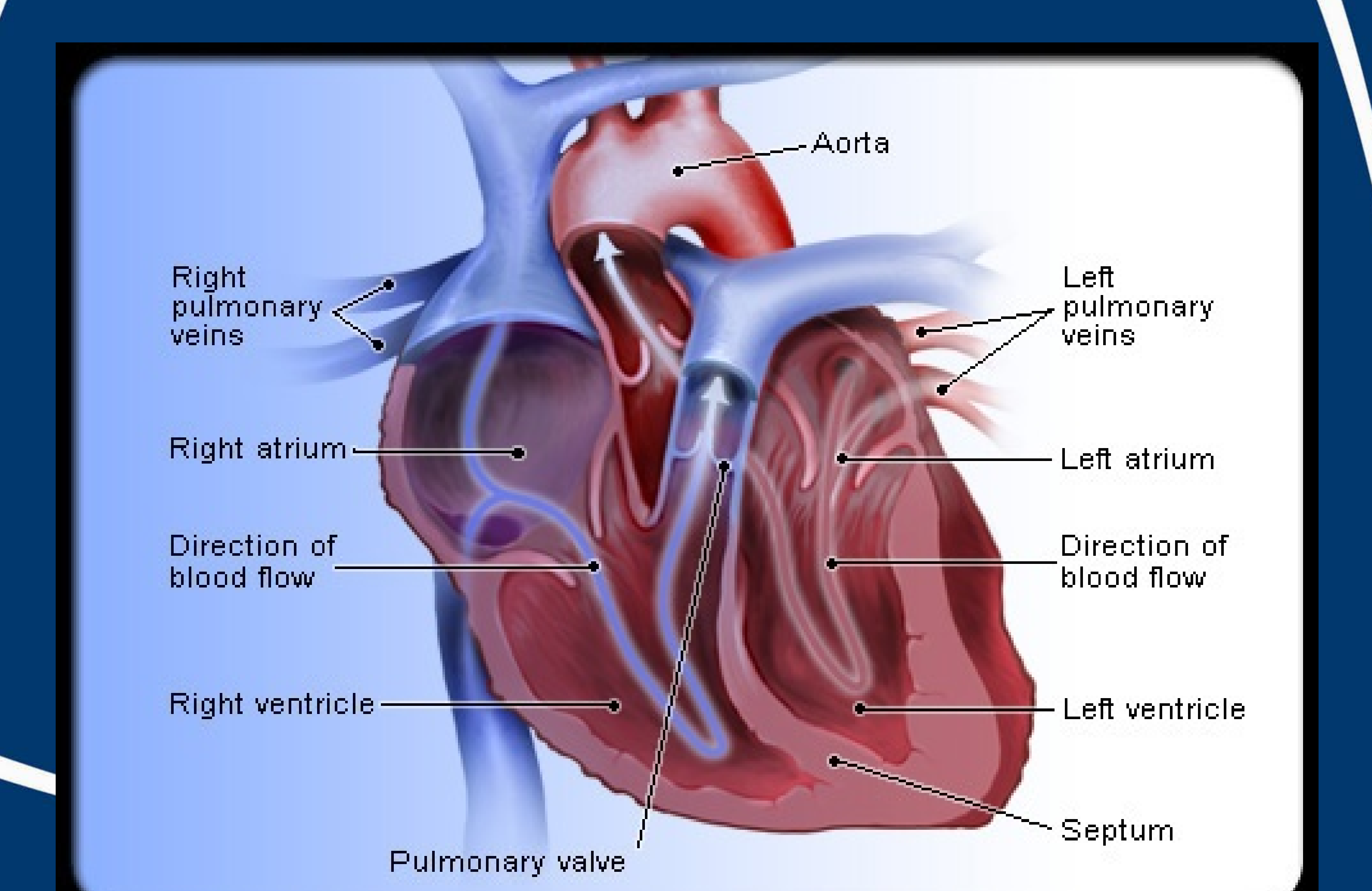
Cardio-Metabolic Syndrome (CMS)

Dr Sultan Mahmood
Consulting Food Ecologist
First DietCare & Research Center, Lahore
Cell 0321.430.2528

At Faiz Ghar on 15 August, 2011

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Save Your Heart from CMS



1. What is Metabolic Syndrome?

Metabolic syndrome is a group of following risk factors:

- Unhealthy blood cholesterol levels,
- High blood pressure,
- High blood sugar, and
- Excess belly fat

They may raise your risks of serious illness, such as diabetes, and blood vessel and heart disease.

It collectively leads to

Cardio-Metabolic Syndrome.

1.1: Screening / What to Test?

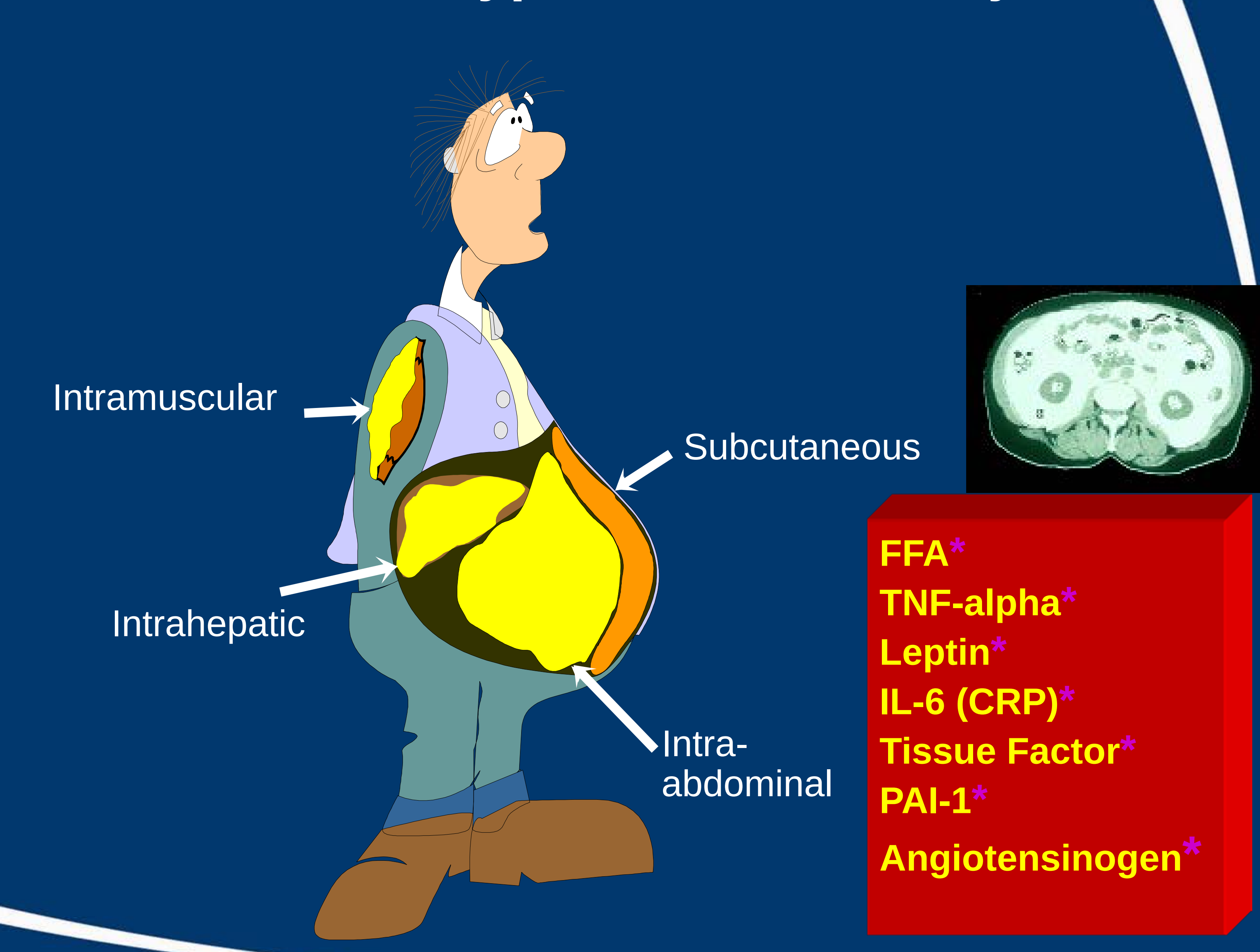
- Screening for at-risk individuals:
  - Blood Sugar/ HbA1c (each 4 months)
  - Blood Lipids (bi-annual)
  - Blood pressure (almost daily)
  - Tobacco use
  - Body habitus
  - Family history

Remember: Patients with Metabolic Syndrome are 3.5 times as likely to die from Cardiovascular disease compared to normal people

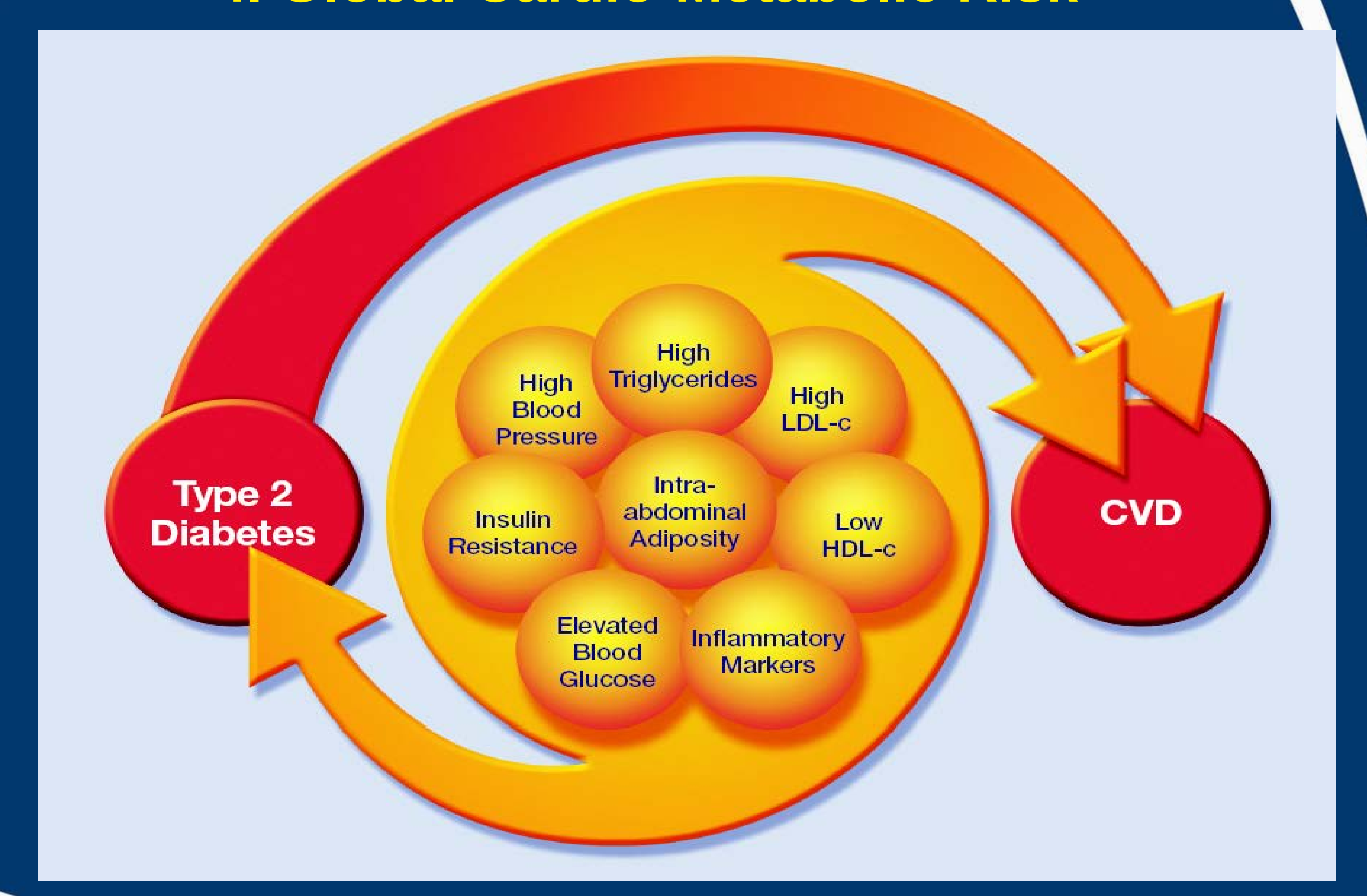
2. Acceptable Levels

1. Hypertension (High blood pressure)		
	Blood pressure	> 140/90
2. Dys-lipidemia (Disturbed level of blood fats)		
	Triglycerides	> 150 mg/ dL (1.7 mmol/L)
	HDL- C	< 35 mg/ dL (0.9 mmol/L)
3. Central Obesity (Bulged belly)		
	Body mass index	> 30 kg/M2
	Waist girth	> 94 cm (37 inch)
	Waist/Hip ratio	> 0.9
4. Impaired Glucose Handling (Lose control of diabetes)		
	Fasting blood glucose	> 110 mg/dL (6.1mmol/L)
	2 hours post prandial	>200 mg/dL(11.1mmol/L)
5. Micro-albuminuria (Protein excretion in urine) < 0 mg/ dL		

3. Fat Placement In Type 2 Diabetic Subjects



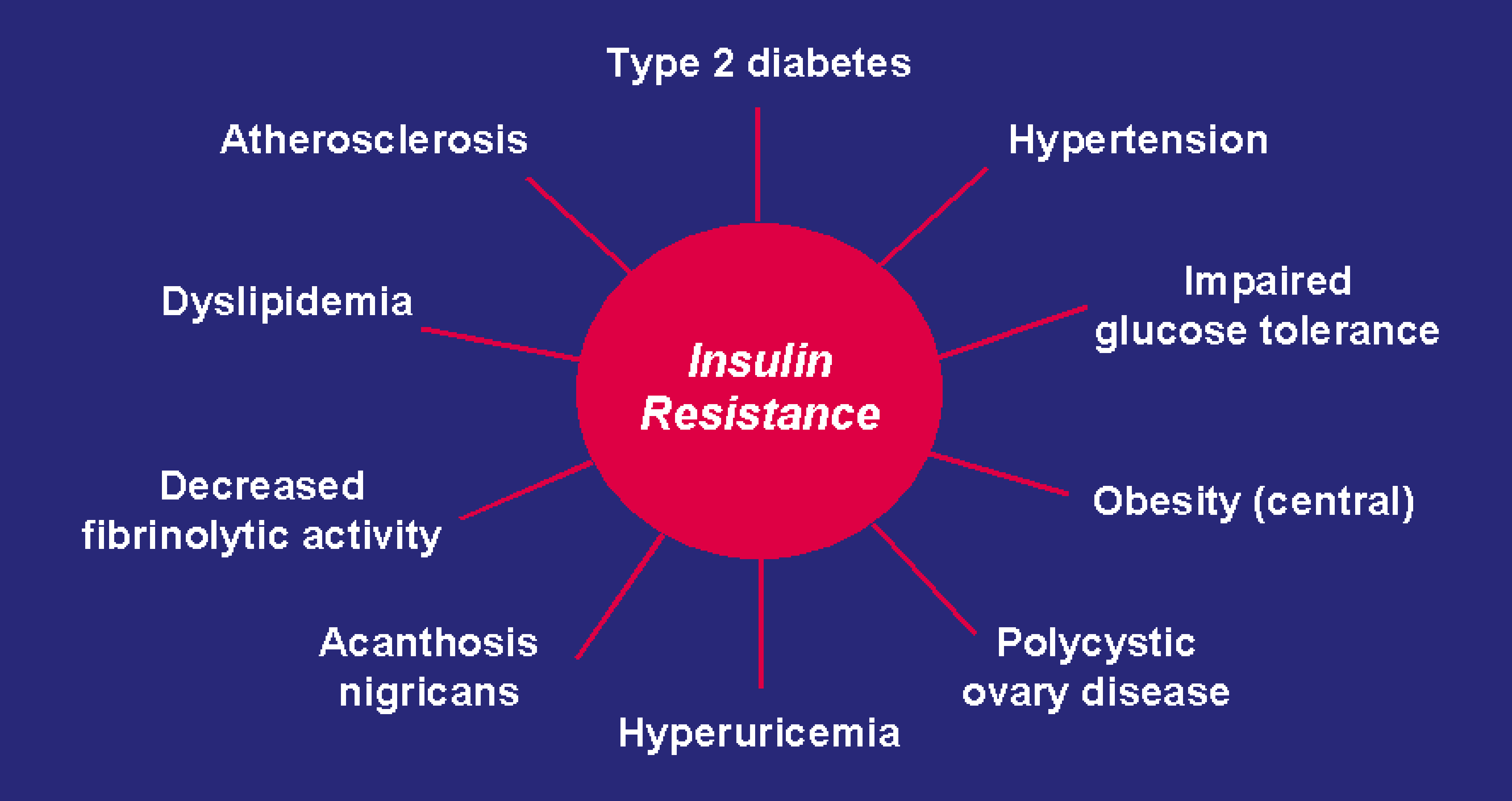
4. Global Cardio-Metabolic Risk*



Gelfand EV *et al*, 2006; Vasudevan AR *et al*, 2005

* working definition

Insulin Resistance: Associated Conditions



Adapted from Consensus Development Conference of the American Diabetes Association. *Diabetes Care*. 1998;21:310-314.

5. Resulting Clinical Conditions If there is insulin Resistance

- Type 2 diabetes
- Essential hypertension
- Polycystic ovary syndrome (PCOS)
- Nonalcoholic fatty liver disease
- Sleep apnea
- Cardiovascular Disease (MI, PVD, Stroke)
- Cancer (Breast, Prostate, Colorectal, Liver)

6. Manage Following Risk Factor

- Obesity
- Glucose Intolerance
- Insulin Resistance
- Lipid Disorders
- Hypertension

Goals: Minimize Risk of Type 2 Diabetes and Cardiovascular Disease

6.1: Diabetes Control - How Important?

Goals:

- ***Fasting blood sugar*** ***= (pre-meal) <110,***
  = (post-meal) <180.
- ***HbA1c*** ***= <7%***

- For every 1% rise in Hb A1c there is an 18% rise in risk of cardiovascular events & a 28% increase in peripheral arterial disease
- Evidence is accumulating to show that tight blood sugar control in both Type 1 and Type 2 diabetes reduces risk of CVD

6.2: BP Control - How Important?

- ***Goal:* BP.<130/80**

- *MRFIT and Framingham Heart Studies:*
  - Conclusively proved the increased risk of CVD with long-term sustained hypertension
  - Demonstrated a 10 year risk of cardiovascular disease in treated patients vs non-treated patients to be 0.40.
  - 40% reduction in stroke with control of HTN

6.3: Lipid Control - How Important?

- ***Goals: HDL >40 mg% (>1.1 mmol /l)***
  LDL <100 mg/dL (<3.0 mmol /l)
  TG   <150 mg% (<1.7 mmol /l)

Multiple major studies show **24 - 37%** reductions in cardiovascular disease risk with use of statins and fibrates in the control of hyper-lipidemia.

7. Lifestyle Modifications

Through
1. Diet
2. Exercise
3. Weight loss
4. Smoking cessation

If 1% reduction in HbA_{1c} is achieved, you could expect a reduction in risk of:

- 21% for any diabetes-related endpoint
- 37% for micro-vascular complications (CVD)
- 14% for myocardial infarction (heart attack)

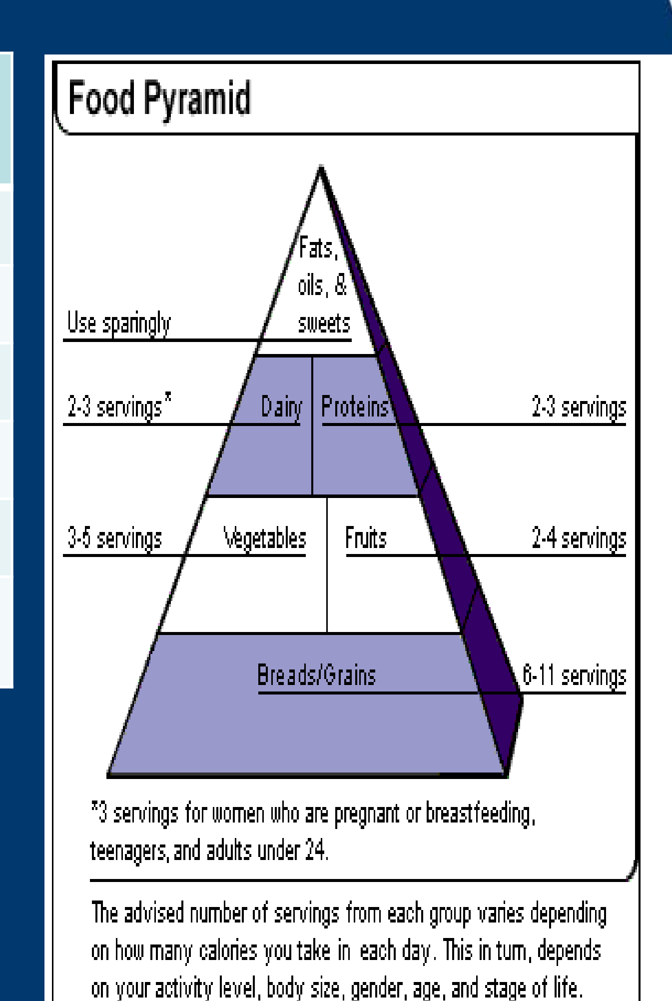
However, if compliance is poor most of the patients will require oral pharmacotherapy (tablets) or insulin injections within a few years of diagnosis

Stratton IM *et al*. *BMJ* 2000; 321: 405–412.

7.1: Diet

Nutrients	Of 2100 Calories / d	Nutrient	Total daily
Total fat	25%	Sodium	2,300 mg*
Saturated fat	6%	Potassium	4,700 mg
Protein	19%	Calcium	1,250 mg
Carbohydrate	50%	Magnesium	500 mg
Cholesterol	150 mg	Fiber	30 g

* 1,500 mg sodium was a lower goal tested and found to be even better for lowering blood pressure. It was particularly effective for middle-aged and older individuals.



7.2: Exercise

Brisk walking - 30 min./day

= 10% reduction in body wt.

It improves

- Cardio-vascular fitness,
- Weight control,
- Sensitivity to insulin,
- *Reduces incidence of diabetes*

7.2.1: Why people are physically inactive?

- Lack of awareness regarding the importance of physical activity for health fitness and prevention of diseases
- Social values and traditions regarding physical exercise (women, restriction, status)
- Non-availability of public places suitable for physical activity (walking and cycling path, gymnasium)
- Modernization of life that reduces physical activity (Sedentary life, TV, Computers, Phones, Cars)

7.3: Weight Loss

<u>It Improves:</u>

1. Insulin sensitivity
2. BP levels



<u>It Reduces:</u>

1. Blood lipid content
2. Incidence of diabetes

7.4: Smoking Cessation / Avoidance:

- A risk factor for development of CMS in children and adults
- Both passive & active smokers are exposed to harmful effects
- A *major risk factor for:*
  - Insulin resistance and metabolic syndrome
  - Macro-vascular disease (PVD, MI, Stroke)
  - Micro-vascular complications of diabetes
  - Pulmonary disease, etc.

8. Ask Your Doctor 11 Questions About Cardio-Metabolic Syndrome



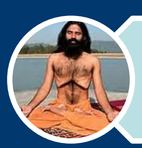
1. Do I have any metabolic syndrome risk factors?



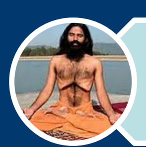
2. Will I need medicine to control them? If so, what are the side effects??



3. Do I need to have blood tests to see higher risk of blood clots and inflammations?



4. What is my BMI (body mass index)?



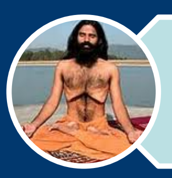
5. Should I lose weight? What's a reasonable weight goal for me?



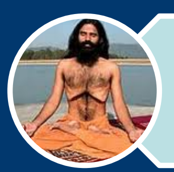
6. What changes should I make to my diet?



7. Should I consider seeing a nutritionist to improve my diet?



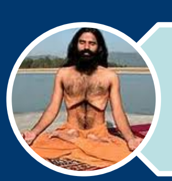
8. Do you have suggestions how I could get more physical activity?



9. Could any medicines be affecting my MS risk factors?



10. How my family history affect my risk of MS & CV problems?



11. Should I be taking aspirin therapy?


Thank You
- Any Question?